

**STATE ADVISORY COUNCIL ON
SCIENCE AND TECHNOLOGY MEETING**

Monday, May 16, 2005

2:00 – 4:30 pm

State Capitol – House of Reps., Rm #125 (West Bldg)

Minutes

In Attendance:

Michael Brehm, Chair
Troy Takach, Design Jug
Ashok Khandkar, Amedica Corp
Brent Miller, USU
Ken O'Brien, USOE
Susan Johnson, Futma Industries
Annette Babisz, DBED
Myrna Hill, DBED Staff

Greg Critchfield, Acting Chair
Tami Goetz, SLCC
Lucille Stoddard, Utah State Regents
Gary Hooper, BYU
Ray Gesteland, U of U
Martin Frey, DBED
Tom Harper, DBED

Excused:

Rich Kendell, Wayne Barlow, and Rick Allis

I. Welcome and Approval of Minutes

Chairman Michael Brehm called the meeting to order at 2:15 p.m. He acknowledged voting members of SAC, and welcomed non-voting members Martin Frey, Director of Division of Business & Economic Development and staff members, Annette Babisz and Tom Harper.

Action: Motion was made by Gary Hooper to approve the minutes of the April 18, 2005 meeting, with a noted correction that Wayne Barlow was omitted from the list attendees; Ashok Khandkar seconded the motion. The motion was unanimously approved.

II. Presentations – Statewide Economic Development Initiatives

- a. Nanotechnology Initiative – In introducing presenter Paul Clayson, Chairman & CEO of NanoCoat, Inc., Chairman Brehm expressed this technology could have a great impact and potential in the State. NanoCoat is a holding company that acquires various nanotechnology companies that does coatings and various kinds of surface treatments. Martin Frey asked him to look into the development of a state nanotechnology initiative. He gathered information and held the first meeting on April 26th where several entities from around the state were invited to discuss development of an initiative.

He explained what nanotechnology is, how it is developing and what opportunities there are for further development in the state. The industry is projected to grow at an exceptionally rapid rate. A tremendous amount of research has gone into development processes of machines that can be developed at that microscopic level. A study by a leading research firm stated that at the end of 2004 "Sales of product incorporating nanotechnology will rise from 1/10 of 1% of global manufacturing outputs today to 15% in 2014 totaling \$2.6 trillion, which will approach the size of the information technology and telecom industries combined, and will be 10 times larger than biotech revenue." It is the third great mega-trend after the development of microchips and mass production of computers and the internet. Estimates for revenue on products utilizing nanotechnology are phenomenal. The study stated "...biotechnology created more than 400,000 jobs from 1979 to 1999; nanotechnology promises a far greater economic impact because it can affect not just biologically derived products, but all manufactured goods. It is not just new jobs that are at risk, but existing jobs in industries impacted by nano-scale science are on the line as well." Therefore a very real risk of inaction in Utah is losing jobs that will go to states that have an emphasis on nanotechnology development.

Research suggests that nanotechnology growth will come from how the fundamental building blocks are used, not necessarily from building nano-particulates themselves. The industry is projected to be

somewhere between \$10 to \$20 billion in the next ten years. Initiatives are developed and in place to get nanotechnology in France, Sweden, Italy, South Africa, China, Japan and virtually all developed countries. The United States has put a great deal of money into nanotechnology development and research in many federal government agencies – the Dept. of Energy alone has 14 different nanotechnology offices established at research centers around the country – doing nanotechnology development on ecological and environmental impact. The total amount of federal money allocated to nanotechnology development in 2003, 2004, 2005 was a little over \$1 billion. Private sectors are also recognizing the significance of nanotechnology development. Paul pointed out there hasn't been a concerted effort in Utah to try to capture a portion of those dollars until recently.

A PR newswire story states: "U.S. states poured more than \$400 million into nanotechnology research facilities and business incubation programs in 2004 on top of the greater than \$1 billion in federal government spending, making nanotechnology the largest publicly funded science in this century's space race..." Many states have made concentrated efforts to develop nanotechnology initiatives, which in many cases has already paid big dividends. Utah is surrounded by states that have nanotechnology initiatives or facilities that we don't have. States that have really flourished either had facilities in place or had a national lab they could put a facility in. Several states and regions have put together multi-state consortiums. Paul said they are looking into contacting some of those consortiums to see if they can become part of an already existing consortium. There is a consortium in the northwest and one in the mountain states, and Utah has made no effort to collaborate with any of them. Studies show California is the most attractive state for nanotech.

The Research Study shows New York has the greatest state-level funding of more than \$150 million in 2004, while 20 states, including New Hampshire and Utah committed almost nothing. California boasts the most nanotech patents with over 200, and 11 states have none to date. There are some nanotechnology patents in Utah – Paul's company currently has three, with four more ready to file soon. A second Research Study on nanotech attractiveness lists Massachusetts as #1. Other development areas considered included strength by state in R&D, technology in general, science workforce, concentration of high-tech companies in place, corporate taxation and regulatory burden, which changes the mix, and Utah was in the middle. While Utah has not made a concerted effort we are ahead because of our strengths in aerospace, biotechnology and medical devices.

Paul listed ideas of what Utah should do regarding this initiative:

- Establish a nanotech research and instrumentation users lab. If Utah had an established facility it would benefit companies and help in attracting national and international efforts to the State.
- Establish a Utah nanotechnology coordination, with a person with exceptional business and commercialization skills to run the office.
- Make a concerted effort to find how to get a person from Utah on one of the multiple nanotechnology economic development committees around the world.
 - People serving on those committees can bring ideas to keep nanotechnology development on the forefront.
 - The world could also benefit from what happens in Utah.
- Begin now to create workforce training in nanotechnology.
 - "The Next Big Thing is Really Small", a book about nanotechnology development states "...it's become conventional wisdom in nanotechnology circles that the U.S. will need between 1 and 2-million new workers trained in nanotechnology science with the vast majority of those workers requiring only a two-year secondary degree."
 - Several states have already started to develop those educational programs.
 - "If the U.S. does not start developing tomorrow's workforce today, it will be built somewhere else such as Singapore, Taiwan, Germany, China, India or other countries."
- Choose a forum that plays to one of our strengths and see if we can develop it in Utah.
- See if we could get The World Nano-Economic Congress, which is held in a different place each year, to come to Utah to focus attention here.
 - An internet site – www.nanotechnologynow.com – lists 300 to 400 different nanotechnology conferences taking place in the United States this year.

- Some of that attention should be focused on Utah.
- Learn where federal government dollars are and pursue getting the State's fair share
 - State government could help – it would be a great service to companies and to nanotech development if someone were appointed to identify available federal money.
 - Some federal government sites list money they will give for various research projects and development of certain types of technology.
- Engage with other states in regional academic, businesses, or government consortiums already established.
 - The Nanotech Institute and a Nanotech Alliance are examples of those that have been established.
- Develop economic competitiveness in the state.
 - Utah ranks #1 in the country for new incubated companies on a per capita basis.
 - Utah ranks #48 out of 50 in the number of those companies still operating after five years.
 - Partly due to business failure, partly due to Utah becoming known as an incubator state.
 - As soon as some companies go commercial, they are bought and moved out of state.
- Constantly look to the future.
 - Dr. Brian Ahearn, Chief Nanotech Scientist in the Air Force for 22 years, stated devices of nanotech material properties will be at the top of the future nanotechnology list.
 - We should never be too focused on what's happening today that we don't look at where it's going in 20 years and build that into the initiative to stay on top.

Why should Utah be involved? Three key challenges will face Utah economically in the next few years: **1)** The out-class economy – in the last ten years there was a net of 17,000 students in the public education arena – in the next 10 years there will be 144,000; at the same time there are 500,00 new seniors coming into the system that will begin to draw on Medicaid and other programs that require state funds leaving a reduced taxpayer base in the middle. **2)** Low average wage-base – Utah has a wage-base of 18% below the national average, while our cost of living is 2% below the national average. We are dramatically behind in the highest wage earning quintiles. **3)** The tax laws – We have a tax system that assists low-paying jobs. The answer is to raise the average wage-base. We either win new nano-jobs for Utah and retain and grow our job base, or we lose the opportunity for nano-jobs and lose existing jobs.

Chairman Brehm underscored that key to this initiative – nanotechnology will impact every one, including the education sector, either directly or indirectly. The Governor and his staff have already sensed the need to make a commitment; there is a good chance there will soon be an initiative or center that will focus on nanotechnology.

Martin asked how the State Science Advisory Council could help with nanotechnology issues. Paul answered the members could probably help a great deal with understanding where opportunities may lie. Tami asked, if it would be possible to get a copy of the presentation. Chairman Brehm felt it should be linked to the Council's website. Paul said it is a 2 mega-bite file. If anyone wants it emailed to them, they should give him their email address.

- b. Cluster Assessment** – As an update, Troy Takach reported several meetings ago Martin introduced the idea of Clusters. Thus far the timeline on this initiative, beginning in March going through April and May, has been met. Meetings have been held on a twice-weekly basis, and a process has emerged to select the Clusters. A presentation of those Clusters will be made within the next week to 10 days at the UTIC meeting – it was stressed that the members of the Science Council should attend. The exact date of the meeting will be known within the next few days, and notification will be sent by email to Council members. The meeting between UTIC and SAC will be the first time the list will be aired for opinions and input.

Governor Huntsman will announce the Clusters at the Economic Summit on June 22nd, and will be followed by a series of meetings where it will presented to a number of audiences – the Economic

Developers around the State, the Tech at Breakfast on Friday, June 24th, and others. There are also long-range timelines such as the Legislative Session in the Fall.

Chairman Brehm mentioned in the earlier meeting, the Governor expressed an interest in the U-Star initiative, which has major investments in university research and involves Brent, Ray and Gary.

Brent Miller in a quick synopsis reported USU and U of U primarily have been coordinating with the Salt Lake Chamber, UTA, ULISA, and with Martin Frey. Of the \$7.35 million funding received from the Legislature this year, \$3 million went to equipment, \$4 million was divided between the U of U and USU to begin hiring senior level research talent in focused targeted areas. \$350,000 is for planning money to help solidify important details of the major initiative. The Legislature was initially approached this year for \$400+ million spread over many years, which was scaled back to this smaller amount. Major committee efforts are underway now that will go for approximately the next six-months. There are 4 or 5 major Task Groups of the various committees. They will report on a periodic basis to the Executive Appropriations Committee of the Legislature. The plan will be in place by November and will need a big appropriation at that time.

Chairman Brehm commented the Governor is anxious to have that initiative vented more broadly than just the immediate stakeholders. He is looking to this Council as a platform, and asked Brent what the best way is for the Council to participate. Brent responded that in the next week to 10 days the committees that have been proposed will be adding additional members and it might be appropriate for the Council to suggest there be a strategic appointment to represent the Council. Also the planning that goes on in the USTAR umbrella could be reported back to the Council. In asking if any member would be willing to accept that challenge, Tami Goetz was asked to fill that role. It was mentioned that Rich Kendell is over the committee that deals with the issue of innovation centers and felt Tami's participation in that would be appropriate. Ashok would be another candidate to fill that role as his expertise would fit in some of the strategic committees.

Action: Chairman Brehm asked Brent to explore that with Rich to see if there would be space for both Tami and Ashok to serve. The timeframe for the study would be before November. In this role they could represent sectors not yet established and also represent the Council in participation and reporting back.

III. SAC Business:

1. **Executive Committee with Governor Huntsman** – Chairman Brehm reported historically, periodic meetings between the Governor and his staff and the Council have been held; this has fallen by the wayside with the past administration. He feels this is something the Council needs to do again. At Martin's suggestion, the Council was able to meet with the Governor to exchange ideas – one being the search for the Science Advisor. Two-thirds of the meeting was spent discussing general missions and issues of the Council – such as the Cluster initiative. He distributed a summary of the talking points and asked Greg to summarize.

Greg reported the Governor specifically requested a monthly update from the Council. They discussed the need for the Council to meet statutory obligations – that the Council is an independent resource on Science and Technology for the Governor and the Legislature. They also discussed refining a role of the State Science Advisor and identifying that role's importance to the State regarding Science and Technology and providing technical support. At the last Council meeting, Gary Hooper made a motion to find the document from 2 or 3 years ago that summarized the Council's statutory requirements. Greg made a power point presentation outlining what could be done:

1. Provide quality and technical expertise and advice to the Governor.
 - a. Meet regularly with the Governor with members of the Legislature and agency directors to update and advise on matters of scientific and technological concerns of the state.
2. Facilitate interagency cooperation on matters of science and technology.

3. Provide scientific expertise in oversight of the Centers of Excellence Program
 - a. Participate in the annual review and propose funding
 - b. Hold regularly scheduled meetings at a minimum of two Centers per year during which a review of the program is provided
4. Provide scientific expertise in development of recycling nuclear waste and transportation science for Utah
 - a. Provide input to DOE in national and regional meetings
5. Promote excellence in science education and enhance scientific literacy for Utahns
 - a. Facilitate a statewide system with systematic improvements in formal and informal science education throughout the State Board of Education Board of Regents
6. Review expenditures of mineral lease funds by State universities insuring high scientific standards be maintained while supporting research initiatives in the State
 - a. The Council is asked to make reports to the Governor on a yearly basis and review reports from research universities providing constructive input.

An action item from the last Council meeting was to present this information in a meeting with the Governor. Chairman Brehm suggested, after modifying this document a little, it should be taken to the next meeting with the Governor.

It was mentioned in the meeting, there were three concerns the Governor has, and asked for review and input in these areas.

1. He wants to understand how USTAR is going,
2. He wants some expert advice on nanotechnology
3. He wants to know if the Cluster alignment makes sense.

At one of the last Executive Committee meetings, Greg suggested a way to approach the Governor is to go with strategies and action items and how to address needs. It could maybe be turned into more of a proactive report. The Council is addressing the need to update the statute.

2. **State Science Advisor Search** – Chairman Brehm reported the Executive Committee received close to three-dozen applications, and screened the list down to 10 individuals. The original plan was to interview all at one time. Realizing the difficulty that would present, he suggested it would make more sense and it was decided to present a short list, if not the individual, when they meet with the Governor. Ten candidates, with one outstanding individual, were interviewed this morning, with Martin's staff facilitating. After background and reference checks, the Council is close to making a referral of two or three names to the Governor, with one being their recommendation. They believe the Governor will act on that soon.

Action: Gary Hooper mentioned a small group was empowered to represent the Council in making these recommendations. He suggested making a formal motion that the Council supports the recommendations and that they be able to tell the Governor the recommendations have the support of the Science Advisory Council. The motion was made by Gary Hooper, Seconded by Susan Johnson; all were in favor.

3. **Governor's Medal Planning** – Greg Critchfield reported the Council will send out a public announcement on this program this month. It is his understanding in the past there was a notice placed on the State Science Advisor's website that nominations were being accepted. An email will go out to several hundred individuals. The email addresses in the database have been verified, and is ready to go. There will also be a press release, which will need approval from the Governor's office, by working with Tammy Kikuchi. Greg said there is a general timeline, but we don't have the date of the actual award ceremony. To get it on the Governor's schedule, they will need to coordinate with his Chief of Staff, Jason Chaffetz. It was also mentioned somewhere in the body of the announcement it is usually suggested there is an opportunity for the Governor to

suggest that particular areas might be of interest in the process. This might be a good year to state that nanotechnology would be of particular interest.

Gary Hooper mentioned there have been very good candidates in the past, that for one reason or another the Council didn't follow through on and they didn't get all the way to the end; he said he doesn't want to lose some like last time. He asked if the Council could send a note back to those less successful candidates and their nominees to tell them we'd like to see them again. It was felt that it could be regenerated with a little effort, and it could be stressed in the letter sent out this year. It was mentioned the Council made a motion to that affect last year.

4. **Future SAC Appointments** – In answer to Chairman Brehm's inquiry, Tami said there was no reason to discuss future appointments at this time. Sharon produced a recent roster showing dates when the existing Council members' terms end; Chairman Brehm is fairly certain some end this year. Between now and the next meeting, would be a good time meet with Sharon Cox to evaluate the membership roster. Chairman Brehm reported he is not able to judge how the new administration will handle appointments, but in the past, the time-lag between when referrals were made and when new members were appointed sometimes approached two years; he feels it will happen sooner under this administration. There is an existing nomination procedure that defines how many members and who they should be, which is shown on the SAC Council website. Chairman Brehm added that most of those they reviewed for the Science Advisor position would be excellent candidates for a Council appointment.
5. **Meeting Schedule** – Chairman Brehm feels it isn't necessary for the Council to meet in June. If the members make sure they participate in the key meetings and committee meetings coming up in the next week to 10 days, he feels the next meeting of the entire Council can be put off until July, August, or September. He will watch the progression of things and if he feels there is a reason to bring the Council together in July, he will advise the members.

Action: Chairman Brehm will notify members when the next meeting is scheduled.

6. **Future Agenda Items** – Chairman Brehm asked the members to think about important topics, people, or presenters that should be invited in the future. It occurred to him as he participated in the Centers of Excellence program last week that the new director of the program, Nicole Toomey-Davis should be invited. He feels the new director should at least make a presentation to summarize what came out of the reviews, and who will be funded, and recap some of the successes. He would like to invite Nicole to address the group when the time is appropriate – probably at the next meeting.

Action: Chairman Brehm asked Annette Babisz to inform Nicole that the Council would be interested in a report on the program, particularly if the Council can contribute in some way to her completion of that report.

Martin added, as we go into the next year he would like the Council to be involved in helping to find what key technology areas should be encouraged – even if they are not a defined cluster – because of their strategic relevance or market trends to help lead the strategic plan. Chairman Brehm feels the Council should have that discussion when Nicole comes.

Action: It was suggested that for future meetings, an agenda schedule be set on content type. Chairman Brehm feels a good goal would be to look at the larger mission. The Council has a strong agenda of what needs to be done, so perhaps build the meetings to support the agenda. He suggested the subject be revisited in a subsequent meeting.

Action: Chairman Brehm asked Myrna to check with Sharon to have her update the website to make sure it is current. She should make sure there are no meeting dates on the website that the Council doesn't intend to keep – make sure the meeting scheduled in June is not listed and that the room is cancelled. Sharon will resume as staff support at the next meeting.

Adjourn: The meeting was adjourned at 4:05 p.m. The meeting was closed without a firm meeting date.

Minutes prepared by Myrna Hill